

# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

M.L.

**PCT**

To:

**Outokumpu OYJ Intellectual  
Property Management  
P.O. Box 27  
FIN-02201 Espoo  
Finland**

**NOTIFICATION OF TRANSMITTAL OF  
INTERNATIONAL PRELIMINARY  
REPORT ON PATENTABILITY  
(Chapter II of the Patent Cooperation Treaty)**

(PCT Rule 71.1)

Date of mailing (day/month/year)	07-09-2004
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Applicant's or agent's file reference  
**20021114**

**IMPORTANT NOTIFICATION**

International application No. <b>PCT/FI2003/000432</b>	International filing date (day/month/year) <b>02-06-2003</b>	Priority date (day/month/year) <b>11-06-2002</b>
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Applicant  
**Outokumpu Oyj  
et al**

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary report on patentability and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

**4. REMINDER**

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary report on patentability. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the *PCT Applicant's Guide*.

The applicant's attention is drawn to Article 33(5), which provides that the criteria of novelty, inventive step and industrial applicability described in Article 33(2) to (4) merely serve the purposes of international preliminary examination and that "any Contracting State may apply additional or different criteria for the purposes of deciding whether, in that State, the claimed invention is patentable or not" (see Also Article 27(5)). Such additional criteria may relate, for example, to exemptions from patentability, requirements for enabling disclosure, clarity and support for the claims.

Name and mailing address of the IPEA/ Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. 08-687 72 88	Telex 17978 PATOREG-S	Authorized officer  <b>Catherine Gunnarson</b> Telephone No. 08-782 25 00
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**PATENT COOPERATION TREATY**  
**PCT**  
**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**  
(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference  20021114 WO	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416																									
International application No.  PCT/FI 2003/000432	International filing date ( <i>day/month/year</i> )  02.06.2003	Priority date ( <i>day/month/year</i> )  11.06.2002																								
<p>International Patent Classification (IPC) or national classification and IPC  C22B 15/00</p>																										
<p><b>Applicant</b>  Outokumpu Oyj et al</p>																										
<p>1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.</p> <p>2. This REPORT consists of a total of <u>3</u> sheets, including this cover sheet.</p> <p>3. This report is also accompanied by ANNEXES, comprising:</p> <p>a. <input checked="" type="checkbox"/> (<i>sent to the applicant and to the International Bureau</i>) a total of <u>2</u> sheets, as follows:</p> <p><input type="checkbox"/> sheets of the description, claims and/or drawings which have been amended and are the basis of this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).</p> <p><input type="checkbox"/> sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.</p> <p>b. <input type="checkbox"/> (<i>sent to the International Bureau only</i>) a total of (indicate type and number of electronic carrier(s)) _____, containing a sequence listing and/or tables related thereto, in computer readable form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).</p> <p>4. This report contains indications relating to the following items:</p> <table style="margin-left: 20px; border-collapse: collapse;"> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. I</td> <td>Basis of the report</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. II</td> <td>Priority</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. III</td> <td>Non-establishment of opinion with regard to novelty, inventive step and industrial applicability</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. IV</td> <td>Lack of unity of invention</td> </tr> <tr> <td><input checked="" type="checkbox"/></td> <td>Box No. V</td> <td>Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VI</td> <td>Certain documents cited</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VII</td> <td>Certain defects in the international application</td> </tr> <tr> <td><input type="checkbox"/></td> <td>Box No. VIII</td> <td>Certain observations on the international application</td> </tr> </table>			<input checked="" type="checkbox"/>	Box No. I	Basis of the report	<input type="checkbox"/>	Box No. II	Priority	<input type="checkbox"/>	Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability	<input type="checkbox"/>	Box No. IV	Lack of unity of invention	<input checked="" type="checkbox"/>	Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability, citations and explanations supporting such statement	<input type="checkbox"/>	Box No. VI	Certain documents cited	<input type="checkbox"/>	Box No. VII	Certain defects in the international application	<input type="checkbox"/>	Box No. VIII	Certain observations on the international application
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Date of submission of the demand  10.12.2003	Date of completion of this report  30.08.2004
Name and mailing address of the IPEA/SE  Patent- och registreringsverket Box 5055 S-102 42 STOCKHOLM Facsimile No. +46 8 667 72 88	Authorized officer  Mårten Hulthén/MP Telephone No. +46 8 782 25 00

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2004/000432

## Box No. I Basis of the report

1. With regard to the language, this report is based on the international application in the language in which it was filed, unless otherwise indicated under this item.

This report is based on a translation from the original language into the following language \_\_\_\_\_, which is the language of a translation furnished for the purposes of:

- international search (under Rules 12.3 and 23.1(b))
- publication of the international application (under Rule 12.4)
- international preliminary examination (under Rules 55.2 and/or 55.3)

2. With regard to the elements of the international application, this report is based on (replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report):

the international application as originally filed/furnished

the description:

pages 1 - 6 \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the claims:

pages \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ as amended (together with any statement) under Article 19

pages\* 7 - 8 \_\_\_\_\_ received by this Authority on 1.7.2004

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

the drawings:

pages 1 - 2 \_\_\_\_\_ as originally filed/furnished

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

pages\* \_\_\_\_\_ received by this Authority on \_\_\_\_\_

a sequence listing and/or any related table(s) – see Supplemental Box Relating to Sequence Listing.

3.  The amendments have resulted in the cancellation of:

- the description, pages \_\_\_\_\_
- the claims, Nos. \_\_\_\_\_
- the drawings, sheets/figs \_\_\_\_\_
- the sequence listing (specify): \_\_\_\_\_
- any table(s) related to the sequence listing (specify): \_\_\_\_\_

4.  This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).

- the description, pages \_\_\_\_\_
- the claims, Nos. \_\_\_\_\_
- the drawings, sheets/figs \_\_\_\_\_
- the sequence listing (specify): \_\_\_\_\_
- any table(s) related to the sequence listing (specify): \_\_\_\_\_

\* If item 4 applies, some or all of those sheets may be marked "superseded."

## INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY

International application No.

PCT/FI 2004/000432

**Box No. V Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Claims 1-8	YES
	Claims _____	NO
Inventive step (IS)	Claims 1-8	YES
	Claims _____	NO
Industrial applicability (IA)	Claims 1-8	YES
	Claims _____	NO

**2. Citations and explanations (Rule 70.7)**

Amended claims 1-8 were filed on 1 July 2004.

Documents cited as being of particular relevance:

D1 US 4470845  
D2 US 4416690  
D3 US 4349383  
D4 US 4528033  
D5 US 5194213  
D6 US 3980470

The invention relates to a method for producing blister copper in a two-step process by using a flash smelting furnace and a subsequent oxidation reactor connected to the flash smelting furnace. The process conditions are controlled in order to create white metal.

D1-D6 disclose different methods for producing blister copper. However, none of the documents disclose a two-step method where the process conditions are controlled as stated in claim 1 of the application and where the oxidation reactor is installed in connection with the flash smelting furnace. Consequently, the invention is novel.

The stated differences imply improvements in producing white metal that contains substantially no slagging components. There is no need for reduction of the slag in order to recover copper. Therefore, the method as defined by the claims is considered to involve an inventive step and is also considered to fulfil the criteria of industrial applicability.

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CLAIMS

1. A method for producing blister copper, according to which method copper concentrate (5), flux (6) and oxygen-enriched air (7) are fed together into a flash smelting furnace (1), so that there are created at least two molten phases, such as white metal (11) and slag (10) and the white metal is oxidized after the flash smelting furnace in at least one oxidizing reactor (12), **characterized** in that oxygen potential is within range  $10^{-7} - 10^{-6}$  and sulfur dioxide partial pressure is within range 0.2 – 1 in the flash smelting furnace (1), and the oxidizing reactor (12) is installed in connection with the flash smelting furnace (1).  
5
2. A method according to claim 1, **characterized** in that oxidizing reactor (12) is arranged to be installed in connection with the flash smelting furnace (1) in a stationary fashion.  
10
3. A method according to claim 1, **characterized** in that the oxidizing reactor (12) is connected to the flash smelting furnace (1) by a melt launder (13).  
15
4. A method according to claim 1 – 3, **characterized** in that the oxidizing reactor (12) is a surface blasting reactor.  
20
5. A method according to claim 1 – 3, **characterized** in that the oxidizing reactor (12) is an injection reactor.  
25
6. A method according to claim 5, **characterized** in that into the oxidizing reactor (12), there also is injected solid white metal.

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7. A method according to claim 1, **characterized** in that the slag (10) is after the suspension smelting furnace (1) treated in an electric furnace in order to recover the copper content thereof.

5       8. A method according to claim 1, **characterized** in that the slag (10) is after the suspension smelting furnace (1) treated in flotation in order to recover the copper content thereof.

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AMENDED SHEET